

**DIGITAL AUTOMATIC GAIN CONTROL OF**  
**A MULTILEVEL OPTICAL DISC READ SIGNAL**

**ABSTRACT OF THE DISCLOSURE**

A system and method are disclosed for providing a gain control signal for a  
5 multilevel read signal. In one embodiment, maximum automatic gain control marks are  
periodically inserted amongst a series of data fields. The automatic gain control marks  
include a series of high level marks such that the maximum signal detected in the interior  
portion of each maximum automatic gain control mark is not reduced by intersymbol  
interference. Minimum automatic gain control marks are also periodically inserted  
10 amongst a series of data fields. The automatic gain control marks include a series of high  
level marks such that the maximum signal detected in the interior portion of each  
minimum automatic gain control mark is not reduced by intersymbol interference. In  
another embodiment, multilevel signals are encoded to facilitate automatic gain control.  
The effect of a plurality of candidate merge symbols on the residual running total power  
15 associated with a current data block is determined. A preferred merge symbol is selected  
based on a residual running total power minimization criteria. The preferred merge  
symbol is added to the current data block.